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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/607,789	06/30/2000	Kyeong-Jun Kim	678-506 (P9382)	1168

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EXAMINER

CHOW, CHARLES CHIANG

ART UNIT	PAPER NUMBER
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2685

DATE MAILED: 07/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<p align="center">Office Action Summary</p>	Application No. 09/607,789	Applicant(s) KIM ET AL.	
	Examiner Charles Chow	Art Unit 2685	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 May 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Detailed Action
(Response to amendment received 5/12/2005)

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claim 1-2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wong (US 6,615,026 B1) in view of Yamashita et al. (US 5,408,699).

Regarding claim 1, Wong teaches a portable radio terminal apparatus including a terminal body [Fig. 1, body of a portable telephone 10] and an antenna (12), wherein said portable radio terminal's overall length is less than $\frac{1}{2}$ wavelength [the increasing of dielectric constant to a value of 100 can reduce the effective $\frac{1}{4}$ wavelength by 10 times, from 7.5 cm to 0.75 cm; col. 3, lines 1-20, for the reducing the portable telephone's overall length by 10 times less than the free space $\frac{1}{2}$ wavelength], the wherein the magnitude of electromagnetic radiation emitted from the current distribution point for the peak radiation in the vicinity of the terminal body is minimized [arrowed "x" in Fig. 1; the peak radiation from antenna 12, Fig. 1] so that the pattern of the emitted electromagnetic waveform adjacent to the terminal is reshaped [the maximum reflecting of the radiated energy away from user's head, abstract; the radiation pattern is reshaped by metallic surface 14 located inside the portable telephone 10, col. 2, lines 54-57; col. 3, lines 26-40] in such a way so as to reduce the influence of electromagnetic waves upon a user's head [the directing, reflecting, radiation energy away from user's head, abstract, col. 2, lines 14-20]. Wong teaches the metallic conductor surface 14 connected on the dielectric printed circuit board having controllable

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dielectric constant value which can be adjusted such that an electrical equivalent length of portable radio terminal is $1/2$ length, col. 3, lines 1-120]. Wong fail to clearly mention the reducing of the peak current distribution point. Yamashita et al. (hereafter as Yamashita) teaches the peak current distribution point 1i in metal frame 18 is cancelled due to the opposite current distributions 1a, 1b, 1c in antenna 22a, 22b, 22c of a portable radio device [Fig. 2, col. 2, line 53 to col. 3, line 3], the metal frame 18 is connected to the printed circuit board [Fig. 3], in order to control the antenna current distribution point. Therefore, it would have been obvious to use the metal conductor near the antenna, for one of ordinary skill in the art at the time of invention to modify Wong with Yamashita's metal conductor, to reshape the peak current distribution point, to reduce the radiation to user's head. Also note that in lines 6-11, the limitations following "thereby" and "wherein" are functional in nature. Given the lack of structure in the claim (merely reciting a conductor of $1/2$ wavelength connected to a printed circuit board), there is no structure to support such functional language, thereby making these limitations practically inherent within the reference applied.

Regarding **claim 2**, Wong teaches the conductor comprising a flat conductive board (the flat metallic 14 in Fig. 1).

2. Claims 3-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wong in view of Yamashita, as applied to claim 1 above, and further in view of Phillips et al. (US 5,572,223). Regarding **claim 3**, Wong, Yamashita fail to teach the strip line. However, Phillips teaches the parasitic radiator 1668 is a thin conductive element on the dielectric 1667 having ground plane 1666 (col. 8, lines 39-54). The thin conductive element on the dielectric layer having ground is applicant's claimed strip line. Phillips teaches the conductor connected to the printed circuit board for high antenna performance (In Fig. 23, the patch radiator 1601 is a

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conductor which is connected to the board 314 through ground pins 1969, at the ground plane 1666; col. 8, lines 41-43; col. 8, line 62 to col. 9, line 9), the different shaped parasitic radiators (Fig. 7-12) which couples to the flap antenna for high antenna performance for a small pocket size antenna (abstract, col. 1, lines 26-31; col. 1, line 65 to col. 2, line 2; col. 7, lines 36-52; col. 3, lines 29-43; and in his claim 1). Phillips teaches the technique for high performance small antenna having parasitic radiator connected to board 314, such that the antenna performance could be improved with parasitic radiator. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify Wong, Yamashita, with Phillips' parasitic radiator connected to the board, to Takei as modified above, such that the antenna performance could be improved with parasitic radiator.

Regarding **claim 4**, Phillips teaches the conductor extending in a straight line from board 314 via ground pins 1969, as shown in Fig. 23, the quarter wavelength parasitic patch radiator 1601 which is a straight line. Phillips also teaches the straight line in Fig. 19, Fig. 20.

Regarding **claim 5**, Phillips teaches the closed loop conductor 1200 in Fig. 12, col. 7, lines 36-52.

3. Claims 6-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chatzipetros (US 5,554,996) in view of Yamashita

Regarding **claims 6, 10**, Chatzipetros teaches a portable radio terminal apparatus [Fig. 1] including a terminal body having a flip 104, antenna 116, comprising a conduction integrated with the flip so that an equivalent ground length formed by the terminal body, the antenna and the flip is longer than $\frac{1}{4}$ wavelength, or is $\frac{1}{2}$ wavelength, thereby shifting the antenna current distribution point and reduce the current radiation, the magnitude of electromagnetic

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radiation emitted from the antenna current distribution point in the vicinity of the terminal body is minimized so that that pattern of the emitted electromagnetic waveform adjacent to the terminal is reshaped in such a way so as to reduce the influence of the electromagnetic wave upon user's head [the flip 104 having antenna 116 interconnected with the direct feed 202, Fig. 2, the direct feed 202 can have incrementing electrical wavelength of one quarter wavelength, col. 3, lines 13-21, so that by adding the direct feed 202, the equivalent ground length formed by radio handset 100, antenna and flap 104 is longer than $1/4$ wavelength, or is $1/2$ wavelength, by incrementing 202 in quarter wavelength, to shift the antenna current distribution and radiation pattern by adding direct feed 202, col. 2, lines 46-61; to reducing the antenna current radiation from a current distribution point having radiated signal level notches at 504, 506, Fig. 5, from radiated signal level in Fig. 3, col. 4, lines 29-40].

Chatzipetros fail to clearly mention the reducing of the peak current distribution point.

Yamashita teaches the peak current distribution point I_i in metal frame 18 is cancelled due to the opposite current distributions I_a , I_b , I_c in antenna 22a, 22b, 22c of a portable radio device [Fig. 2, col. 2, line 53 to col. 3, line 3], the metal frame 18 is connected to the printed circuit board [Fig. 3], in order to control the antenna current distribution point. Therefore, it would have been obvious to use the metal conductor near the antenna, for one of ordinary skill in the art at the time of invention to modify Wong with Yamashita's metal conductor, to reshape the peak current distribution point, to reduce the radiation to user's head.

Regarding **claim 7**, Chatzipetros taught above the conductive is inserted within a flip, by imbedding the conductive material into the plastic flap 104 (col. 2, lines 34-40).

Regarding **claim 8**, Chatzipetros taught above the conductive paint for the parasitic radiator 116 (col. 2, lines 62-67) for applicant's claimed conductive pigments.

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Regarding claim 9, Chatzipetros taught above the parasitic radiator 116 is a conductive copper sticker tape to flap 104 (col. 2, lines 62-67).

Response to Arguments

4. Applicant's arguments with respect to claims 1-10 have been considered but are moot in view of the new ground(s) of rejection.

Regarding applicant's argument for the no teachings for the peak current distribution point for the radiation pattern, the ground of rejection has been changed to include Yamashita et al. (US 5,408,699). Yamashita et al. teaches the peak current distribution point li in metal frame 18 is cancelled due to the opposite current distributions la, lb, lc in antenna 22a, 22b, 22c of a portable radio device [Fig. 2, col. 2, line 53 to col. 3, line 3], the metal frame 18 is connected to the printed circuit board [Fig. 3], in order to control the antenna current distribution point.

Conclusion

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Charles C. Chow whose telephone number is (571) 272-7889. The examiner can normally be reached on 8:00am-5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Urban can be reached on (571) 272-7899. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

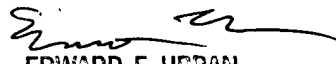
Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information

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about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Charles Chow *CC*

June 27, 2005.


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